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10/700,338

11/03/2003

Lewis K. Cime

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VIERRA MAGEN MARCUS & DENIRO LLP
575 MARKET STREET SUITE 2500
SAN FRANCISCO, CA 94105

EXAMINER

WEI, ZHENG

ART UNIT

PAPER NUMBER

2192

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/03/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/700,338

Applicant(s)

CIRNE ET AL.

Examiner

Zheng Wei

Art Unit

2192

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/02/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the application filed on 11/03/2003.
2. Claims 1-46 are pending and have been examined.

Priority

3. This application claims benefits of the provisional application (60/424,745) filed on 11/07/2002. Therefore, the priority date for this application is 11/07/2002.

Information Disclosure Statement

4. The information disclosure statements filed on 12/02/2005 has been placed in the application file and the information referred to therein has been considered.

Claim Objections

5. Claims 15 and 38 are objected to because of the following informalities:

Claim 15: Claim 15 should depend on claim 13 instead of claim 12;

Claim 38: Claims 38 should depend on claim 33 instead of claim 3.

For the purpose of compact prosecution, the Examiner treats claim 15 as the dependent claim of claim 13 and claim 38 depends on claim 33.

Appropriate correction is required.

6. Claim 43 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is

required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 43: Claim 43 is a dependent claim of claim 41. However, they are duplicate claims.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-39:

The term "complex" in claims 1-39 is a relative term which renders the claim indefinite. The term "complex" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purpose of compact prosecution, the Examiner treats the term "complex" as one method can call other methods.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1, 7, 8, 10, 12, 13, 20 and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Berkley (Berkley et al., US 6351843 B1).

Claim 1:

Berkley discloses a process for monitoring, comprising:

- accessing a method (see for example Fig.5, step 350 and related text, also see, col.2, lines 36-37, "Further, the system includes means for running the application executable using the modified runtime configuration settings");
- determining whether said method is complex (see for example, Fig.1 and related text, "METHOD B", "METHOD C" and also see col.2, lines 39-40, "means for determining whether the function (method) is active for a class of the executable using the modified configuration settings"); and
- modifying said method for a particular purpose only if said method is complex (see for example, col.2, lines 41-43, "means for dynamically creating a redirection stub to insert the function for the class if the function is active for that class")

Claim 7:

Berkley further discloses a process according to claim 1, wherein: said step of modifying includes modifying object code (see for example, col.2, lines 45-46, "inserting a function into an application executable without recompiling the executable.")

Claim 8:

Berkley also discloses a process according to claim 1, wherein: said step of modifying includes adding a tracer for said method (see for example, Fig.5, step 360 and related text, also see, col.3, lines 6-8, "To restate, a technique is presented for dynamically modifying class lineage in order to insert a function, such as a trace function...").

Claim 10:

Berkley further discloses a process according to claim 1, wherein: said step of modifying includes adding exit code and start code to existing object code (see for example, Fig.6, step 460 and related text, "Create redirection stubs that will call trace entry and ext method around target method").

Claim 12:

Berkley also discloses a process according to claim 1, wherein: said particular purpose is to add a first tracer (see for example, Fig.5, step 360 and related text, also see, col.3, lines 6-8, "To restate, a technique is presented for dynamically modifying class lineage in order to insert a function, such as a trace function...").

Claim 13:

Berkley discloses a process for monitoring, comprising:

- determining which methods of a set of methods are complex (see for example, Fig.1 and related text, "METHOD B", "METHOD C" and also see col.2, lines 39-40, "means for determining whether the function (method) is active for a class of the executable using the modified configuration settings"); and
- using a first tracing mechanism for said methods determined to be complex without using said first tracing mechanism for methods not determined to be complex (see for example, col.2, lines 41-43, "means for dynamically creating a redirection stub to insert the function for the class if the function is active for that class", also see Fig.5, step 360 and related text, also see, col.3, lines 6-8, "To restate, a technique is presented for dynamically modifying class lineage in order to insert a function, such as a trace function...").

Claim 20:

Berkley further discloses a process according to claim 13, wherein: said step of using a first tracing mechanism includes modifying existing object code to add said first tracing mechanism (see for example, Fig.5, step 360 and related text, also see, col.3, lines 6-8, "To restate, a technique is presented for dynamically modifying class lineage in order to insert a function, such as a trace function...").

Claim 39:

Berkley discloses an apparatus capable of monitoring, comprising:

- means for determining whether a method is complex (see for example, Fig.1 and related text, "METHOD B", "METHOD C" and also see col.2, lines 39-40, "means for determining whether the function (method) is active for a class of the executable using the modified configuration settings"); and
- means for tracing said method for a particular purpose only if said method is complex (see for example, col.2, lines 41-43, "means for dynamically creating a redirection stub to insert the function for the class if the function is active for that class", also see Fig.5, step 360 and related text, also see, col.3, lines 6-8, "To restate, a technique is presented for dynamically modifying class lineage in order to insert a function, such as a trace function...").

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2-6, 9, 11, 14-19, 21, 22-32, 33-38 and 40-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkley (Berkley et al., US 6351843 B1)

Claims 2 and 14:

Berkley discloses processes according to claims 1 and 13 respectively, but does not explicitly disclose said step of determining whether said method is complex includes determining whether said method is non-synthetic. However, It is well known in the Java programming that all synthetic methods generated by Java compiler are flagged in the class file and thus are easily identified. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine whether said method is non-synthetic by checking the synthetic attribute field in bytecode while being compiled by JIT, Hotspot runtime or other bytecode scanning tools. One would have been motivated to do so to allow a user to trace specified one or more methods of which the function is to be implemented as suggested by Berkley (see for example, col.2, lines 7-14, "dynamically inserting a function into an existing application executable", "allows a user to specify one or more methods for which

the function is to be implemented")

Claims 3 and 15:

Berkley discloses processes according to claim 1 and 13 respectively, but does not explicitly disclose said step of determining whether said method is complex includes determining whether said method has an access level of public or package. However, it is well known in the Java programming that JVM specification defines a set of access flags in method_info structure which has a flag name "ACC_PUBLIC" for access level of public or package. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine whether said method has an access level of public or package by using JIT, Hotspot runtime or other bytecode scanning tools to check this flag to determining whether said method has an access level of public or package. One would have been motivated to do so to allow a user to trace specified one or more methods of which the function is to be implemented as suggested by Berkley (see for example, col.2, lines 7-14, "dynamically inserting a function into an existing application executable", "allows a user to specify one or more methods for which the function is to be implemented")

Claims 4 and 16:

Berkley discloses a process according to claim 1 and 13 above respectively, but does not explicitly disclose said step of determining whether said method is complex includes determining whether said method calls another method. However, it is well known in the Java programming that JVM specification defines method by using "Method" tag in java bytecode. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine whether said method calls another method by checking the "Method" tag while being compiled by JIT, Hotspot runtime or other bytecode scanning tools. One would have been motivated to do so to allow a user to trace specified one or more methods of which the function is to be implemented as suggested by Berkley (see for example, col.2, lines 7-14, "dynamically inserting a function into an existing application executable", "allows a user to specify one or more methods for which the function is to be implemented")

Claims 5 and 17:

Berkley discloses processes according to claim 1 and 13 above respectively, but does not disclose said step of determining whether said method is complex includes determining whether said method is non-synthetic, calls another method and has an access level of public or package. However, according to the rejection for the claims 2, 3, 4 and 14, 15, 16 above, it would have been obvious to one having ordinary skill in the art at the time the invention was made to

combine those steps together to further focus on tracing specify one or more methods for which the function is to be implemented as suggested by Berkley (see for example, col.2, lines 7-14, "dynamically inserting a function into an existing application executable", "allows a user to specify one or more methods for which the function is to be implemented")

Claims 6 and 18:

Berkley discloses processes according to claim 1 and 13 above respectively, but does not disclose said step of determining whether said method is complex includes determining whether said method calls one or more different methods and can be called by a sufficient scope of one or more other methods. However, it is well known in the Java programming that JVM specification defines method by using a block starting with the tag "Method" that contains the information about calling other methods in java bytecode. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine whether said method calls another method and can be called by a sufficient scope of one or more other methods by checking the method information in that block while running by JIT in JVM or other bytecode scanning tools. One would have been motivated to do so to allow a user to trace specified one or more methods of which the function is to be implemented as suggested by Berkley (see for example, col.2, lines 7-14, "dynamically inserting a function into an existing application executable", "allows a user to specify one or more

methods for which the function is to be implemented")

Claim 40:

Berkley discloses an apparatus capable of monitoring, comprising:

- a storage device (see for example, Fig.3, items 102, 103 "Main Storage", "External Storage Media" and related text); and
- one or more processors in communication with said storage device (see for example, Fig.3, item 104, "CPU 1...CPU N" and related text), said one or more processors perform a process comprising:
 - accessing a method (see for example Fig.5, step 350 and related text, also see, col.2, lines 36-37, "Further, the system includes means for running the application executable using the modified runtime configuration settings");
 - tracing said method for a particular purpose only if said method calls one or more different methods and can be called by a sufficient scope of one or more other methods (see for example, col.2, lines 41-43, "means for dynamically creating a redirection stub to insert the function for the class if the function is active for that class", also see Fig.5, step 360 and related text, also see, col.3, lines 6-8, "To restate, a technique is presented for dynamically modifying class lineage in order to insert a function, such as a trace function...").

But Berkley does not disclose:

- determining whether said method calls one or more different methods and can be called by a sufficient scope of one or more other methods.

However, it is well known in the Java programming that JVM (Java Virtual Machine) specification defines method by using a block starting with the tag "Method" that contains the information about calling other methods in java bytecode. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine whether said method calls another method and can be called by a sufficient scope of one or more other methods by checking the method information in that block while running by JIT in JVM or other bytecode scanning tools. One would have been motivated to do so to allow a user to trace specified one or more methods of which the function is to be implemented as suggested by Berkley (see for example, col.2, lines 7-14, "dynamically inserting a function into an existing application executable", "allows a user to specify one or more methods for which the function is to be implemented")

Claim 44:

Berkley discloses an apparatus according to claim 40 and further discloses said process further includes modifying existing object code for said method in order to add a first tracing mechanism (see for example, col.2, lines 45-46, "inserting a function into an application executable without recompiling the executable.")

13. Claims 9, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkley (Berkley et al., US 6,351,843) in view of Berry (Berkley et al., US 6,662,359).

Claim 9:

Berkley discloses a process according to claim 1, but does not explicitly disclose said step of modifying includes adding a timer for said method. However, Berry in the same analogous art of system and method for injecting hooks into java classes to handle exception and finalization processing discloses using timestamp (see for example, col.14, lines 1-19, column 3 in the example table, "timestamp" and related text"). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use timestamp as a way to trace specified application executable. One would have been motivated to do so to allow a user to trace specified one or more methods of which the function is to be implemented as suggested by Berkley (see for example, col.2, lines 7-14, "dynamically inserting a function into an existing application executable", "allows a user to specify one or more methods for which the function is to be implemented")

Claim 11:

Berkley discloses a process according to claim 10, wherein:

- said start code starts a tracing process (see for example, Fig.6, step 460 and related text, "Create redirection stubs that will call trace entry and ext method around target method");
- said exit code stops said tracing process (see for example, Fig.6, step 460 and related text, "Create redirection stubs that will call trace entry and ext method around target method");
- said exit code is positioned to be executed subsequent to original object code (see for example, Fig.6, step 470 and related text, "Remaining class construction flows");

But Berkley does not disclose said steps of adding exit code including jump instruction, exception table and said step of adding an entry in said exception table. However, Berry in the same analogous art of system and method for injecting hooks into java classes to handle exception and finalization processing discloses:

- said step of adding exit code includes adding an instruction to jump to said exit code from said original object code (see for example. Fig.8 steps 812-816 and related text, also see col.9, line 55- col.10, line 8,"a jump around inserted code");

- said step of adding exit code includes adding an entry in an exception table; and (see for example. Fig.8 step 802 and related text "Modify the exception table");
- said step of adding an entry in said exceptions table includes adding a new entry into said exceptions table for said method, said new entry indicates a range of indices corresponding to said original object code, said new entry includes a reference to said exit code and said new entry indicates that said new entry pertains to all types of exceptions (see for example. Fig.8 steps 812-816 and related text, also see col.9, line 55- col.10, line 8,"a jump around inserted code");

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add jump instruction and maintain exception table for inserting function into an application executable at runtime. One Would have been motivated to integrated Berry's steps into Berkley's process to ensure that code which moved due to either insertions or deletions is correctly relocated and related references are adjusted as pointed out by Berry (See for example, Col.9, lines 55-58, "to ensure that code which is moved due to either insertions or deletions is correctly relocated and related references are adjusted")

Claim 19:

Berkley discloses a process according to claim 13, but does not explicitly disclose said step of modifying includes adding a timer for said method.

However, Berry in the same analogous art of system and method for injecting hooks into java classes to handle exception and finalization processing discloses using timestamp (see for example, col.14, lines 1-19, column 3 in the example table, "timestamp" and related text"). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use timestamp as a way to trace specified application executable. One would have been motivated to do so to allow a user to trace specified one or more methods of which the function is to be implemented as suggested by Berkley (see for example, col.2, lines 7-14, "dynamically inserting a function into an existing application executable", "allows a user to specify one or more methods for which the function is to be implemented")

Claim 21:

Berkley discloses a process according to claim 20, but does not explicitly disclose said step of modifying includes adding a timer for said method.

However, Berry in the same analogous art of system and method for injecting hooks into java classes to handle exception and finalization processing discloses using timestamp (see for example, col.14, lines 1-19, column 3 in the example table, "timestamp" and related text"). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use timestamp as a way to trace specified application executable. One would have been motivated to do so to allow a user to trace specified one or more methods

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of which the function is to be implemented as suggested by Berkley (see for example, col.2, lines 7-14, "dynamically inserting a function into an existing application executable", "allows a user to specify one or more methods for which the function is to be implemented")

Claims 22-32:

Claims 22-32 claim one or more processor readable storage devices having processor readable code embodied on said processor readable storage devices, which is the product version of the process claims as discussed in claims 1-11 above respectively. Therefore, these claims are obvious over Berkley and Berry, because it is well known in the computer art to practice and/or produce such a program product for carrying out the acts/steps of such process by a typical computer processor.

Claims 33-38:

Claims 33-38 claim one or more processor readable storage devices having processor readable code embodied on said processor readable storage devices, said processor readable code for programming one or more processors to perform a process as discussed in claims 13-17 and 19 above respectively. Therefore, these claims are obvious over Berkley and Berry, because it is well

known in the computer art to practice and/or produce such a program product for carrying out the acts/steps of such process by a typical computer processor.

Claim 45:

Berkley discloses an apparatus according to claim 44 above, but does not disclose said first tracing mechanism includes a timer. However, Berry in the same analogous art of system and method for injecting hooks into java classes to handle exception and finalization processing discloses using timestamp (see for example, col.14, lines 1-19, column 3 in the example table, "timestamp" and related text"). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use timestamp as a way to trace specified application executable. One would have been motivated to do so to allow a user to trace specified one or more methods of which the function is to be implemented as suggested by Berkley (see for example, col.2, lines 7-14, "dynamically inserting a function into an existing application executable", "allows a user to specify one or more methods for which the function is to be implemented").

Claim 46:

Berkley discloses an apparatus according to claim 44 above, but does not disclose said step of tracing includes timing said method. However, Berry in the same analogous art of system and method for injecting hooks into java classes to handle exception and finalization processing discloses using timestamp (see for example, col.14, lines 1-19, column 3 in the example table, "timestamp" and related text"). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use timestamp as a way to trace specified application executable. One would have been motivated to do so to allow a user to trace specified one or more methods of which the function is to be implemented as suggested by Berkley (see for example, col.2, lines 7-14, "dynamically inserting a function into an existing application executable", "allows a user to specify one or more methods for which the function is to be implemented").

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

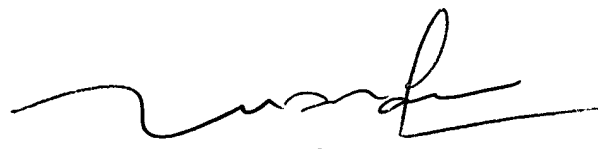
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zheng Wei whose telephone number is (571) 270-1059. The examiner can normally be reached on Monday-Thursday 8:00-15:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571- 272-1000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ZW



TUAN DAM
SUPERVISORY PATENT EXAMINER